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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

KE, PENG

ART UNIT	PAPER NUMBER
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2174

DATE MAILED: 07/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	09/742,781		RAJARAJAN ET AL.	
	Examiner		Art Unit	
	Peng Ke		2174	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 May 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This action is responsive to communications: Amendment, filed on 5/4/06.

Claims 1-29 are pending in this application. Claims 1, 14, and 19 are independent claims. In the Amendment, filed on 5/4/06, 1, 14 and 19 were amended.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1-3, 5-10, 13-25, 27, 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rostoker et al. (US 6,470,482) in view Padwekar (US 6,925,584).

As per claim 1, Rostoker et al. teaches in a computing device, a system comprising:

a modeling engine for editing modeling elements, the modeling engine connected to a user interface and operable to emulate an electronic system design having a plurality of electronic elements; (figure 9, item "VHDL"; col. 15, lines 14-53; Examiner interprets design specification, design description, partitioning, Module description, composition, and functional verification to be a part of editing modeling process.)

a layout engine, the layout engine connected to the modeling engine and configured to execute an automatic layout process that automatically lays out modeling elements of the emulated electronic system design; (figure 9, item "VHDL Compiler & Simulator", col. 18, lines 29-68; Examiner interprets Design Compiler to be a layout engine)

However, Rostoker et al. fails to teach a set of at least one interface connecting the modeling engine to the layout engine, the set including at least one interface through which the modeling engine communicates with the layout engine to provide state-maintained user interaction with the automatic layout process other than to cancel the automatic layout process, wherein the layout engine may interrupt the automatic layout process at a first operational point and resume from the first operational point.

Padwekar et al. teaches a set of at least one interface connecting the modeling engine to the layout engine, the set including at least one interface (column 7, lines 5-15) through which the modeling engine communicates with the layout engine to provide state-maintained user interaction with the automatic layout process other than to cancel the automatic layout process, wherein the layout engine may interrupt the automatic layout process at a first operational point and resume from the first operational point. (column 3, lines 20-column 4, lines 65)

It would have been obvious to an artisan at the time of the invention to include Padwekar's teaching with Rostoker's method in order to provide user with the ability to pause and resume entire process with a push of button.

As per claim 2, Rostoker and Padwekar teach the system of claim 1. Padwekar further teaches wherein the modeling engine communicates with the layout engine by calls from the layout engine via the interface (column 7, lines 5-15).

As per claim 3, Rostoker and Padwekar teach the system of claim 1. Rostoker further teaches wherein the modeling engine communicates with the layout engine via events raised by the layout engine (column 22, lines 20-56).

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As per claim 5, Rostoker and Padwekar teach the system of claim 1. Rostoker further teaches wherein the modeling engine communicates with the layout engine to obtain status information from the layout engine (column 22, lines 20-56).

AS per claim 6, Rostoker and Padwekar teach the system of claim 1. Padwekar further teaches wherein the modeling engine communicates with the layout engine to interrupt the automatic layout process (column 3, lines 20-column 4, lines 65).

As per claim 7, Rostoker and Padwekar teach the system of claim 1. Padwekar further teaches wherein the modeling engine communicates with the layout engine to preserve state of the automatic layout process (column 3, lines 20-column 4, lines 65).

As per claim 8, Rostoker and Padwekar teach the system of claim 7. Padwekar further teaches wherein the modeling engine communicates with the layout engine to preserve the state of the automatic layout process by passing an interface thereto (column 3, lines 20-column 4, lines 65).

As per claim 9, Rostoker and Padwekar teach the system of claim 7. Padwekar further teaches wherein the modeling engine communicates with the layout engine to restore the state of the automatic layout process, and to resume the automatic layout process (column 3, lines 20-column 4, lines 65).

As per claim 10, Rostoker and Padwekar teach the system of claim 9. Padwekar further teaches wherein the modeling engine communicates with the layout engine to restore the state of the automatic layout process by passing an interface thereto (column 3, lines 20-column 4, lines 65).

As per claim 13, Rostoker and Padwekar teach the system of claim 1. Rostoker further teaches wherein the modeling engine communicates with the layout engine to obtain capability information from the layout engine (column 22, lines 20-56)

As per claim 14, Rostoker teaches a computer-implemented method, comprising:

Starting a layout engine to layout electronic model elements that are part of an emulated electronic system; (figure 9, item "VHDL"; col. 15, lines 14-53)

However Rostoker fails to teaches receiving information from the layout engine indicating that it can be safely interrupted within a current state; and

Interrupting the layout engine in the current state based on the information, such that an automatic layout process may be interrupted at a first operational point and resume from the first operation point.

Padwekar teaches receiving information from the layout engine indicating that it can be safely interrupted within a current state; and

Interrupting the layout engine in the current state based on the information, such that an automatic layout process may be interrupted at a first operational point and resume from the first operation point. (column 3, lines 20-column 4, lines 65)

It would have been obvious to an artisan at the time of the invention to include Padwekar's teaching with Rostoker's method in order to provide user with the ability to pause and resume entire process with a push of button.

As per claim 15, Rostoker and Padwekar teach the system of claim 14. Rostoker further teaches wherein receiving information comprises receiving an event (column 22, lines 20-56);

As per claim 16, Rostoker and Padwekar teach the system of claim 14. Padwekar further teaches further comprising, receiving a request to interrupt the layout engine, and waiting for the information from the layout engine indicating that it can be safely interrupted (column 3, lines 20-column 4, lines 65).

As per claim 17, Rostoker and Padwekar teach the method of claim 14. Padwekar further teaches wherein the request comprises a user action (column 3, lines 20-column 4, lines 65). It is inherent that a user set the initial interruption or the probe mode break.

As per claim 18, Rostoker and Padwekar teach the method of claim 14. Padwekar further teach a computer computer-readable medium having computer executable instructions for performing the method of claim 14 (column 3, lines 20-column 4, lines 65).

As per claim 19, Rostoker et al. teaches a computer-implemented method, comprising:
starting a layout engine to lay out electronic model elements that are part of an emulated electronic system (figure 9, item "VHDL"; col. 15, lines 14-53; Examiner interprets design specification, design description, partitioning, Module description, composition, and functional verification to be a part of editing modeling process.)

interrupting the layout engine (col. 10, lines 3-14);
(col. 20, lines 52-57, col. 25, lines 6-10; Examiner interprets the analyzers and interrupters, which are set by the user and can be interrupted the compilation, to be user interactions with automatic layout process)

However, Rostoker et al. fails to teach
providing information to the layout engine by which the layout engine preserves state information;

providing information to the layout engine by which the layout engine restores state from the state information and

restarting the layout engine from the restored state.

An layout process may be interrupted at a first operational point and resume from the first operational point;

Padwekar teach providing information to the layout engine by which the layout engine preserves state information (column 3, lines 20-column 4, lines 65);

providing information to the layout engine by which the layout engine restores state from the state information (column 3, lines 20-column 4, lines 65); restarting the layout engine from the restored state (col. 10, lines 3-14).

A layout process may be interrupted at a first operational point and resume from the first operational point; (column 3, lines 20-column 4, lines 65)

It would have been obvious to an artisan at the time of the invention to include Padwekar's teaching with Rostoker's method in order to provide user with the ability to pause entire process with a push of button.

As per claim 20, Rostoker and Padwekar teach the system of claim 19. Padwekar further teaches wherein starting the layout engine includes communicating information to the layout engine through an interface thereof (column 7, lines 5-15).

As per claim 21, Rostoker and Padwekar teach the system of claim 19. Rostoker further teaches wherein providing information to the layout engine by which the layout engine preserves state information includes passing an interface to the layout engine (column 22, lines 20-56).

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As per claim 22, Rostoker and Padwekar teach the system of claim 19. Padwekar further teaches wherein interrupting the layout engine includes communicating information to the layout engine through an interface thereof (column 3, lines 20-column 4, lines 65).

As per claim 23, which is dependent on claim 22, it is of the same scope as claim 15. (see rejection above).

As per claim 24, Rostoker and Padwekar teach the system of claim 19. Padwekar further teaches wherein providing information to the layout engine by which the layout engine restores state information includes passing an interface to the layout engine (column 3, lines 20-column 4, lines 65).

As per claim 25, Rostoker and Padwekar teach the system of claim 19. Rostoker further teaches comprising, receiving events from the layout engine (column 22, lines 20-56).

As per claim 26, which is dependent on claim 25, it is of the same scope as claim 4 (see rejection above).

As per claim 27, Rostoker and Padwekar teach the system of claim 19. Rostoker further teaches comprising, calling the layout engine to receive status information therefrom (column 22, lines 20-56).

As per claim 29, Rostoker and Padwekar teach the system of claim 19. Rostoker further teaches a computer-readable medium having computer executable instructions for performing the method of claim (column 14, lines 24-55).

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rostoker et al. (US 6,470,482) in view of Padwekar (US 6,925,584) in view of Hurtado et al. (US 6,418,421).

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As per claim 28, Rostoker and Padwekar teach the method of claim 19. However, they fail to teach wherein the status information includes data corresponding to time remaining to complete laying out the model elements. Hurtado et al. teach a method wherein the status information includes data corresponding to time remaining to complete laying out the model elements (col. 56, lines 20-35.). It would have been obvious to an artisan at the time of the invention to include Hurtado's teaching with engine of Rostoker and Padwekar in order to allow the users to utilize their time more efficiently.

Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rostoker et al. (US 6,470,482) in view of Padwekar (US 6,925,584) in view of Wittenburg et al. (US 6,515,656).

As per claim 11, Rostoker and Padwekar teach the system of claim 1. However, Rostoker et al. and Padwekar fail to teach the system wherein the layout engine comprises a pluggable software component. Wittenburg teaches usage and implementation of pluggable software (col. 7, lines 14-34). It would have been obvious to an artisan at the time of the invention to include Wittenburg's teaching with engine of Rostoker and Padwekar in order to allow user to add components that are independent of other components.

As per claim 12, Rostoker Padwekar and Wittenburg teach the system of claim 1. Wittenburg further teaches wherein the modeling engine comprises a pluggable software component (col. 7, lines 14-34).

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rostoker et al. (US 6,470,482) in view of Padwekar (US 6,925,584) in view of Lyle (US 5,956,023).

As per claim 4, Rostoker and Padwekar teach the system of claim 1. However they both fail to teach wherein the modeling engine communicates with the layout engine to provide a progress indicator to the user. (Fig. 11, item 78)

Lyle teaches wherein the modeling engine communicates with the layout engine to provide a progress indicator to the user. (Fig. 11, item 78)

It would have been obvious to an artisan at the time of the invention to include Lyle's teaching with engine of Rostoker and Padwekar in order to allow users to keep track of the implementation process.

Response To Argument

Applicant's arguments with respect to claims 1-29 have been considered but are deemed to be moot in view of the new grounds of rejection.

Conclusion

The following patents are cited to further show the state of the art with respect to interrupting method:

Barry et al. (US 6,842,811) discloses a methods and apparatus for scalable array processor interrupt detection and response.

Matt et al. (US 6,324, 684) discloses a processor having real-time execution control for debug functions without a debug monitor.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peng Ke whose telephone number is (571) 272-4062. The examiner can normally be reached on M-Th and Alternate Fridays 8:30-5:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kristine L. Kincaid can be reached on (571) 272-4063. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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